



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/695,840	10/26/2000	Shinsuke Henmi	Q61431	3264

7590 09/27/2007
Sughrue Mion Zinn Macpeak & Seas
2100 Pennsylvania Avenue NW
Washington, DC 20037

EXAMINER

MULLINS, BURTON S

ART UNIT	PAPER NUMBER
----------	--------------

2834

MAIL DATE	DELIVERY MODE
-----------	---------------

09/27/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

TH

Office Action Summary	Application No.	Applicant(s)	
	09/695,840	HENMI ET AL.	
	Examiner	Art Unit	
	Burton S. Mullins	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 05 September 2007.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1,2 and 21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1,2,21 is/are rejected. *Bm*
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 15 March 2007 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____
- 5) Notice of Informal Patent Application
- 6) Other: _____

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 17 January 2002 fails to comply with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609 because a list of all the references per 37 CFR 1.98 has not been provided. In the remarks filed 28 June 2007, applicant states that a courtesy copy of the IDS was submitted; however, no copy was found in the file. Applicant is requested to re-submit the IDS list. Applicant is advised that the date of any re-submission of any item of information contained in this information disclosure statement or the submission of any missing element(s) will be the date of submission for purposes of determining compliance with the requirements based on the time of filing the statement, including all certification requirements for statements under 37 CFR 1.97(e). See MPEP § 609.05(a).

Drawings

2. The drawings were received on 15 March 2007. These drawings are accepted.

Claim Rejections - 35 USC § 112

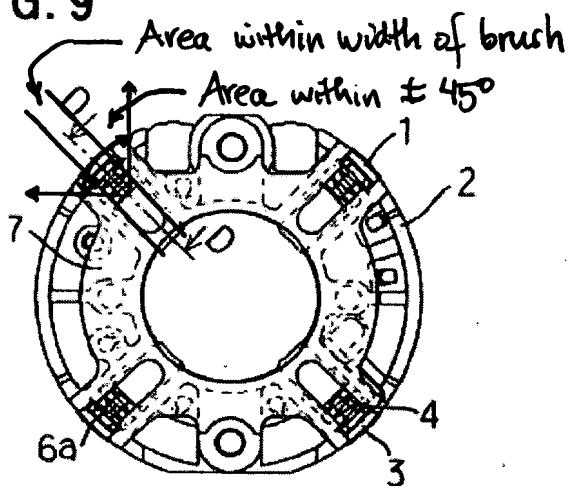
3. Claims 1-2 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, recitation "the pigtail extends from the introducing portion of the brush in the direction of a motor shaft" duplicates the recitation on lines 3-4 of "a pigtail having one end extending from an introducing portion at an upper side of the brush in a direction parallel to a

motor shaft". The recitation is further indefinite because it is not clear if this means the pigtails one end extends radially, toward the motor shaft (i.e. perpendicular to the shaft) or axially, in a direction parallel to the shaft. For purposes of comparison with the prior art, in view of the recitation that the one end extends "in a direction parallel to a motor shaft", the latter interpretation will be taken and it will be assumed that the recitation is duplicative and adds no further limitations beyond those already cited on lines 3-4.

In claim 21, recitation "wherein the terminal plate and the second end of the pigtails are connected in an area within the width of the brush along a radial direction of the brush holder" is indefinite since it is not consistent with the previously recited limitation of "a terminal plate connected to a second end of the pigtails in an area within $\pm 45^\circ$ from the introducing portion in a direction of the sliding axis of the brush toward an outside of the brush holder". Claim 21 is directed to embodiment 3 (Figs.9-11) wherein the pigtails extends from a 'backside' of the brush opposite the motor shaft, i.e., introducing portion 6c (Fig.10; specification p.11, first paragraph). A terminal plate is connected to a second end of the pigtails in an area within $\pm 45^\circ$ from the introducing portion in a direction of the sliding axis of the brush, i.e., within $\pm 45^\circ$ of the radial line through the brush axis shown in Fig.9 (see marked Fig.9 below). However, the further limitation appears to limit the connection of the terminal plate and second end of the pigtails to an area that may be significantly less than " $\pm 45^\circ$ from the introducing portion", i.e. the width of the brush. Thus, the scope of the claim is not clear and the claim is indefinite.

FIG. 9



Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

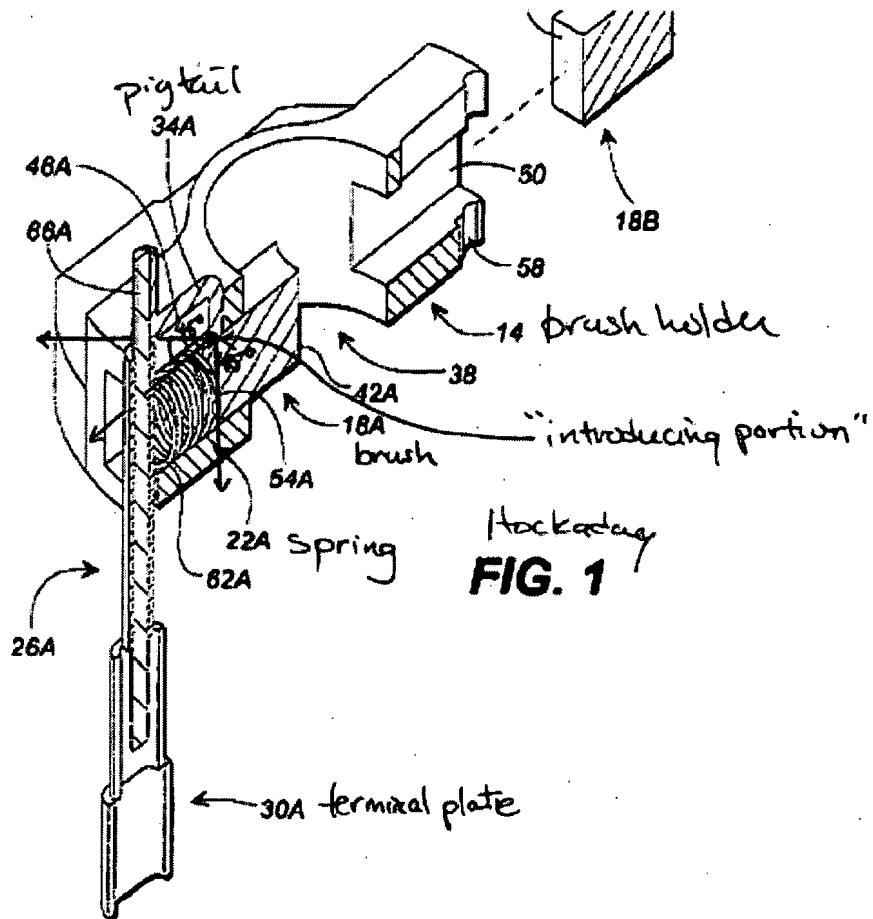
5. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakao et al. (US 5,785,145) and Hockaday (US 6,246,144). Wakao generally teaches applicant's invention including a brush holder for a dynamo-electric machine comprising a motor for an electric power steering apparatus (c.1:5-8), the dynamo-electric machine rotatable in both directions (inherent); a brush holder 33 wherein a spring 36 and a brush 35 are disposed on a brush holder base (insulator) 34 (Fig.2; c.4:10-15); and a pigtail (lead wire) 37 having one end extending from an "introducing portion" (not numbered) of the brush 33 "in a direction parallel to a motor shaft" (Fig.2 shows pigtail 37 connected to brush 35, the pigtail extending axially from the "introducing portion" in a direction parallel to shaft 30), wherein the pigtail extends from the introducing portion of the brush in the direction of the motor shaft (as noted above, this is a duplicate

recitation and refers to the recited feature of the pigtail 37 having one end extending from an “introducing portion” of the brush 33 “in a direction parallel to a motor shaft”).

Wakao differs in that: 1) the one end of pigtail 37 extending from the introducing portion extends from a lower side of the brush, not “an upper side” as claimed; and 2) the second end of Wakao’s pigtail 37 is connected to an output section of the drive circuit on drive circuit board 22 (c.4: 16-18), not to “a terminal plate connected to a second end of the pigtail [37] in an area within $\pm 45^\circ$ from the introducing portion toward the radial direction of the brush holder [33] toward and outside of the brush holder...wherein a column extends from the terminal plate and connects with the second end of the pigtail.”

Hockaday teaches a brush holder and lead arrangement for a dynamo-electric machine comprising a brush holder (holder/card) 14 including a spring 22A and a brush 18A set in a brush holder base (slot) 50 (Fig.1). Specifically regarding feature (1), a pigtail/shunt 34A extends from an introducing portion at an upper side of the brush 18A (i.e., as seen in Fig.1 pigtail 34A extends upward from a connection point with brush 18A, not numbered) in the direction of a motor shaft (i.e., this portion of the pigtail 34A extends parallel to the machine axis; Fig.1). Regarding feature (2), Hockaday teaches that terminal plate 30A and the pigtail 34A are connected in an area within $\pm 45^\circ$ from an introducing portion toward the radial direction of the brush holder (at portion 66A; see marked Fig.1 below) toward an outside of the brush holder. A column comprising portion 66A extends from the terminal plate 30A to connect with the pigtail 34A (Fig.1). Hockaday’s lead wire structure (which comprises the terminal plate 30A and column 66A), where the pigtail shunt 34A extends from an upper side of the brush 18A so as to co-operate with the lead wire structure and column extending from the upper side of the

brush holder 14, provides a brush assembly structure sufficiently rigid to withstand the expansive force of the spring without significant deformation (c.2:38-42&58-61).



It would have been obvious to modify Wakao and provide the terminal plate and the pigtail connected in an area within $\pm 45^\circ$ from the introducing portion toward the radial direction of the brush holder per Hockaday to provide a brush assembly structure sufficiently rigid to withstand the expansive force of the spring without significant deformation.

Regarding claim 2, in Hockaday the terminal 30A and the pigtail 34A are connected in an area around a sliding axis of the brush “within the width of the brush” [sic] since the terminal/pigtail connection at portion 66A lies more or less radially of the brush 18A (Fig.1).

6. Claim 21, as best understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Wakao et al. (US 5,785,145) and Southall (US 5,159,222). As described above, Wakao generally discloses applicant’s invention but differs in that the pigtail (lead wire) 37 does not extend from the introducing portion in the brush 35 “in the direction of the sliding axis of the brush” and further does not teach “a terminal plate connected to a second end of pigtail in an area within $\pm 45^\circ$ from the introducing portion in a direction of the sliding axis of the brush toward an outside of the brush holder...wherein a column extends from the terminal plate and connects with the second end of the pigtail and wherein the terminal plate and the second end of the pigtail are connected in an area within the width of the brush along a radial direction of the brush holder.”

Southall teaches a brush holder plate 11 including brush cartridge 15, a brush 26 and coil spring 27S fit into the cartridge (Fig.3), and a brush terminal (spade connector) 23 electrically connected with a pigtail 25 at upper channel portion 24 (c.5, line 56-c.6, line 8). As seen in Fig.3, the pigtail 25 extends from the introducing portion in the brush 26 in a direction of the sliding axis of the brush 26, and the terminal plate 23 and the pigtail 25 are connected in an area within $\pm 45^\circ$ from the introducing portion toward the radial direction of the brush holder 11 (Figs.1&3). Further, the spade connector/terminal 23 inherently comprises a ‘column’ extending from the terminal plate due to the L-shape of the spade connector 23 (Fig.3). Finally, the terminal plate 23 and second end of the pigtail 25 are connected in an area within the width of

the brush 26 along a radial direction of the brush holder 11 as apparent from Figs.1&3, which shows that the connection is generally along the same radius as the brush 26, within the width of the brush 26. Southall's brush holder facilitates removal and replacement of worn commutator brushes (c.3, lines 22-34).

It would have been obvious to modify Wakao and provide a brush holder having a pigtail extending from the introducing portion in the brush in a direction of the sliding axis of the brush holder, the terminal plate and the pigtail connected in an area within $\pm 45^\circ$ from the introducing portion toward the radial direction of the brush holder, and a terminal with a column per Southall since these features would have facilitated removal and replacement of worn commutator brushes.

Response to Arguments

7. Applicant's arguments filed 28 June 2007 have been fully considered but they are not wholly persuasive.

A. Rejection of claims 1-2 over Wakao and Hockaday

Regarding applicant's argument that since Wakao's wire 37 must be connected to the drive circuit board 22, it would not have been obvious to have the end of the wire 37 connected to a terminal in the manner disclosed in Hockaday, it is noted that Hockaday's terminals (lead wires 26A/B comprising terminal plates 30A/B and columns 66A/B are described as "connect[ed] to an external switch *or other device or component*" (c.4:10-13; emphasis added). The "other device or component" would include a drive circuit board such as in Wakao.

Regarding applicant's argument that it would not have been obvious to incorporate the additional structure of Hockaday to perform what Wakao already accomplishes, i.e., compression of the spring, it is noted that the motivation for modifying Wakao is the teaching in Hockaday that his brush assembly provides a structure sufficiently rigid to withstand the expansive force of the spring without significant deformation (Hockaday; c.2:38-42&58-61).

Regarding applicant's argument that there is no motivation for substituting the vertically constructed terminal in Hockaday in place of Wakao's horizontal drive circuit 22, it is noted that Hockaday's terminals (lead wires 26A/B comprising terminal plates 30A/B and columns 66A/B) are described as "connect[ed] to an external switch *or other device or component*" (c.4:10-13; emphasis added). The "other device or component" would include a drive circuit board such as in Wakao.

Regarding applicant's argument that in Wakao, the pigtail extends from the bottom, not the top of the brush, it is conceded that this feature distinguishes over Wakao alone. However, Hockaday teaches this feature to provide sufficiently rigid to withstand the expansive force of the spring without significant deformation. It is apparent that the extension of the pigtail from the top of the brush (as opposed to the bottom) in Hockaday contributes to the rigidity of the structure because the lead wire (i.e., terminal plate 30A and column 66A) must extend axially through the entire brush assembly, i.e., from the lower side of the brush assembly where the lead wire makes with "an external switch or other device or component" (per c.4:10-13), through the body of the brush assembly 14, to the upper side thereof to connect with the pigtail 34 (Fig.1). If the pigtail were to extend from the bottom of Hockaday's brush, the radial cutout (not numbered, Fig.1) of the brush assembly slot 50 in which the pigtail 34 radially slides would not provide

support for the lead wire's terminal/column structure 30/66 (located in 'slot' 58 on the same radius as the cutout; Fig.1), and therefore the brush assembly would not be able to withstand the expansive force of the spring without significant deformation. Thus motivation does exist in Hockaday for the feature of pigtail extending from an "upper side" of the brush.

Regarding applicant's argument that one would not have been motivated to modify Wakao to have a column extending from the terminal plate that connects with the second end of the pigtail since in Wakao the second end is connected to a circuit board 22, it is conceded that Wakao alone does not teach this feature. However, Hockaday teaches this feature as described above and furthermore is not inconsistent nor teaches away from Wakao because in Hockaday the lead wires 26A/B comprising terminal plates 30A/B and columns 66A/B are described as "connect[ed] to an external switch *or other device or component*" (c.4:10-13; emphasis added). The "other device or component" would include a drive circuit board such as in Wakao.

B. Rejection of claim 21 over Wakao and Southall

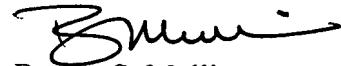
Regarding applicant's argument that Wakao's downwardly-extending wire/pigtail 37 connecting with circuit board 22 teaches away from the combination with Southall where the pigtail extends radially from the brush, it is conceded that Wakao alone does not teach a pigtail extending from the introducing portion in the brush "in the direction of the sliding axis of the brush" and further does not teach the claimed terminal plate structures. It is noted that the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of

the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this case, Southall teaches the additional limitations, and it is apparent that the radial orientation of pigtail connection improves removal and replacement of the snap-in brush cartridges 15. The spade connectors 23 are slid onto lip connectors 22 (c.5:56-64) to thereby allow a brush cartridge to be snapped in place (c.4:38-42&62-65; c.5:56-c.6:3). The radial orientation of the spade terminal/pigtail connection at one end of the brush (c.6:1-3) thereby affords electrical and mechanical connection between the cartridge 15 and base 11.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 571-272-2029. The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Burton S. Mullins
Primary Examiner
Art Unit 2834

bsm
24 September 2007

Drawings
OK
RGM
9/24/07

FIG. 3

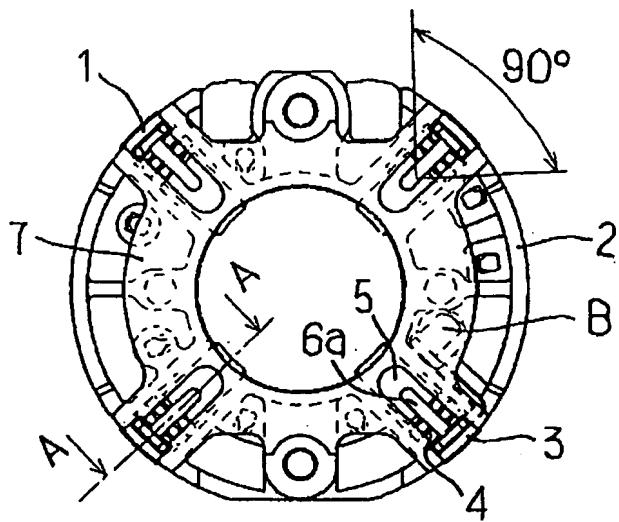


FIG. 4

